



# Better Training for Safer Food *Initiative*

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**Biosecurity**

# BTSEF

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# SUMMARY

- *Biosecurity*
  - ✓ **Farm level («peace time»)**
  - ✓ **Within the framework of disease control («during a crisis»)**
- *Risk factors involved in the spread of African swine fever*
- *Biosecurity in the backyard system*

# Why is **BIOSECURITY** important?

In the EU Animal Health Law:

The word "BIOSECURITY" is mentioned 70 times!!

...the word "VETERINARIAN"? 49 times

Let's take that as a proxy for "importance in disease prevention and control" 😊

# Definitions

## Biosecurity according to EU Animal Health Law:

“Biosecurity’ means the sum of management and physical measures designed to reduce the risk of the introduction, development and spread of diseases to, from and within: (a) an animal population, or (b) an establishment, zone, compartment, means of transport or any other facilities, premises or location”

# What is important on BIOSECURITY?

From EU Animal Health Law:

Biosecurity is one of the key prevention tools (...) to prevent the introduction, development and spread of transmissible animal diseases to, from and within an animal population.

The biosecurity measures adopted should be sufficiently flexible, suit the type of production and the species or categories of animals involved and take account of the local circumstances and technical developments.

While biosecurity may require some upfront investment, the resulting reduction in animal disease should be a positive incentive for operators.

## More definitions

*“The implementation of measures that reduce the risk (1) of the introduction and (2) spread of disease agents; it requires the adoption of a set of attitudes and behaviours by people to reduce risk in all activities involving domestic, captive/exotic and wild animals and their products”*

(FAO/OIE/World Bank, 2008 – Good Practices for Biosecurity in the Pig Sector)

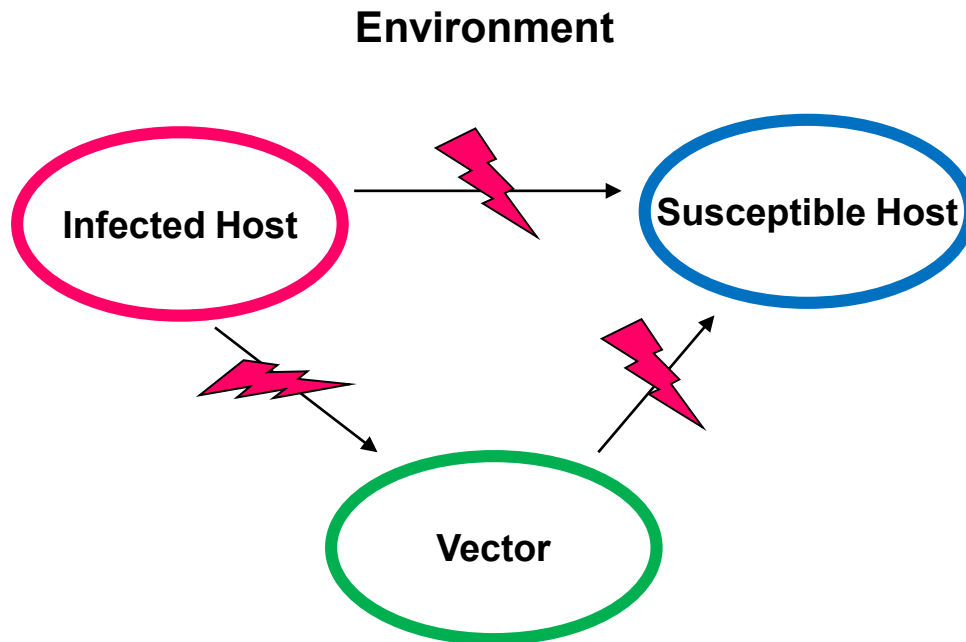
# Definitions

More than anything:

**Biosecurity is a “mindset” or “philosophy” that must be developed by producers**

- It requires the adoption of a set of attitudes and behaviours by people to reduce risk in all activities.
- There is no “one fits all” solution – biosecurity should be adapted to present risks

# Where does it come into play?





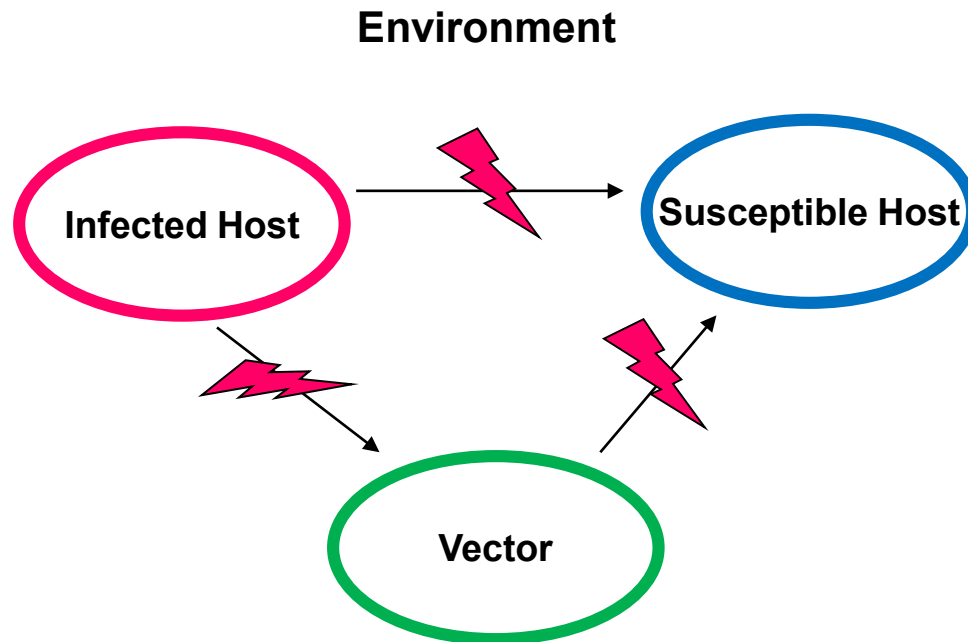
## **Different scenarios for implementation**

**Peace-time: routine work on-farm, no specific target**

**Crisis-time: specific target, beyond routine, extra effort**

**Peace-time and crisis-time biosecurity measures follow the same principles but have different main concerns**

# Where does it come into play?



# Technical pillars of biosecurity

**Simple but not always easy!**

- 1. Segregation**
- 2. Cleaning**
- 3. Disinfection**



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# Segregation



Food safety

# Cleaning and disinfection

**Rule number one: you can not disinfect something that is not clean!**

## Some general steps for proper cleaning

- Remove all moveable objects mechanical removal of all visible dirt / contamination („dry cleaning work“)
- Use of water and soap to moisture all surfaces
  - Give it time to soak
- Rinse of
  - No visible dirt should remain
  - Finished when rinsing water is clean

This process removes about 99% of all pathogens!!

## Some general steps for proper disinfection

- Surface must be cleaned
- Surface must be dry
- Apply disinfectant as prescribed by manufacturer
  - Contact time
  - Temperature
- Rinse of
  - No visible remains of disinfectant
  - Finished when rinsing water is clean

Important as it might have adverse effect on animals!

## How to implement specific biosecurity plans?

- 1. Know the production systems you want to address («know your friends»)**
2. Know the disease and its spreading pathways (know your enemy»)
3. Be pragmatic and reasonable
4. Be strict in the implementation



## Biosecurity at farm level

### *BIOSECURITY aiming at the interface to the external*

- Isolation (barriers, fences, gate, signs..)
- Quarantine
- Area for the disinfection of vehicles (Equipment, disinfectants)
- Loading/Unloading area
- Movements management (animals, vehicles, waste, carcasses, feed)
- C&D: people, vehicles, equipment
- Recording of the movements: animals, people, vehicles
- Buying-in Policy
- Partnership
- Training

## Biosecurity at farm level

### *BIOSECURITY aiming at the farm-internal procedures*

- Grouping of animals: age, health status, productive cycles...
- Removal / Disposal of dead animals
- Manure management
- Vaccination
- Feeding
- Procedures for internal control: feed, water..
- Recordings / documentation
- C&D
- Rodent control
- Training

## Production systems

There are a number of different animal production systems to take into account when biosecurity measures are reviewed. In Europe they can be grouped in 3 main categories:

Commercial farms - production is professionalized and clearly market-oriented, important source of income

Family / backyard or hobby farms - having one or a few pigs, local market or own consumption, not main source of income

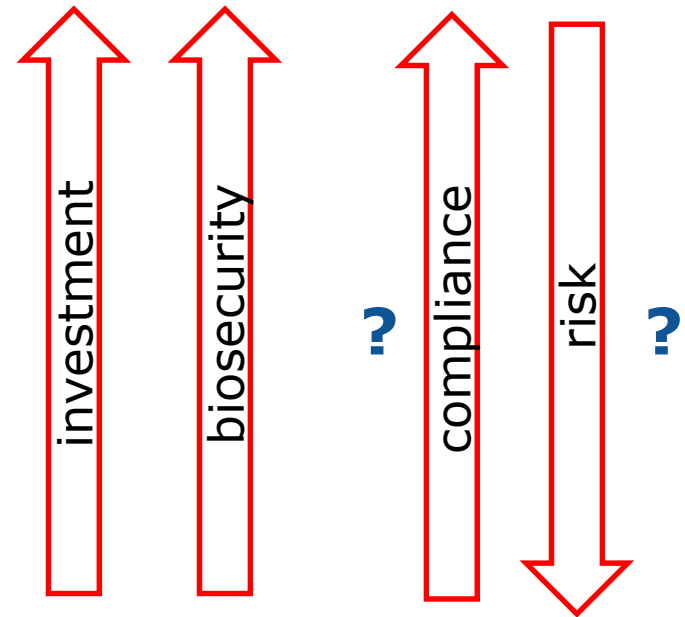
Organic farms - less intensive production systems, based on access to outdoor areas

# Production systems

Larger size commercial farms

Organic farms

Family / backyard or hobby farms



## How to implement specific biosecurity plans?

1. Know the production systems you want to address («know your friends»)
2. **Know the disease and its spreading pathways (know your enemy»)**
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## Factors affecting the spreading pathways of a disease:

- ✓ **Characteristics of the host(s):**  
*susceptibility and contagiousness*
- ✓ **Characteristics of the pathogen:**  
*infectivity, virulence and stability*
- ✓ **Effectiveness of the contact**



**Strongly Dependent on Population  
Density**

# African Swine Fever Virus:

- ASFV is resistant in the environment / carcasses
- ASFV can remain infectious for 3–6 months in uncooked pork products
  - **Chilled meat: at least 15 weeks**
  - **Frozen meat: ...years**
  - **3 to 6 months in hams and sausages**
- Soft ticks of the genus *Ornithodoros* may act as biological vector, within the vector: trans-stadial, trans-ovarial, and sexual transmission occur



The ASFV: large enveloped DNA virus genus *Asfivirus*, family *Asfaviridae*, one serotype but 16 genotypes and different strains of different virulence.

# Typical risk factors for ASF spread

- Introduction of infected pigs in the herd
- Swill feeding with contaminated pork (spread and maintenance)
- Wild boar – Domestic pigs interface
- Contaminated vehicles, people or feed
- Infected ticks (*Ornithodoros* genus)



# Scientific Opinion on African swine fever (*EFSA Journal 2014;12(4):3628*)

**Table 1:** Main sources and routes of transmission established during the outbreaks of ASF in domestic pigs in years 2008-2012

Source and transmission of virus	Number	%
Selling infected pigs	1	0,3
Neighbourhood (infected pigs in backyards)	5	1,7
Direct contact with humans (having a meal right at the farm)	1	0,3
Contact during transportation, shipping, movement	108	38
ASFV infected wild boar	4	1,4
Swill feeding	100	35
Not established	65	23
Total:	284	100

Source: Belyanin, 2013

## Main Risk Factors for diseases introduction and spread:

- ✓ Introduction of animals into the holding
- ✓ Introduction of vehicles/means of transport:
  - Animals
  - Runts,...rejected pigs
  - Carcasses
  - Feed
- ✓ Personnel, veterinarians, inseminators and visitors
- ✓ Introduction of equipment
- ✓ Introduction of feed
- ✓ Manure
- ✓ Area: use of common area / pasture (use of manure on agricultural land as fertilizer)
- ✓ Presence of wildlife animals
- ✓ Presence of rodents, birds, insects..
- ✓ Introduction of semen
- ✓ Vaccine, water, air...

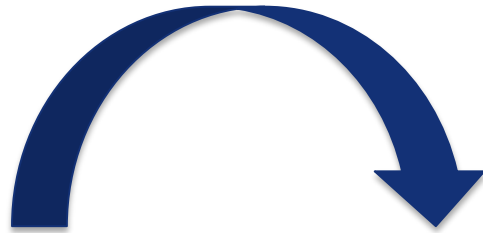
## How to implement specific biosecurity plans?

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# What can we expect?





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# Entrance

YES





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# Entrance

YES



# Foot disinfection mat

**NO**



# Surrounding Area

**NO**





# Entrance and surrounding area

**YES**



## Container for dead pigs & surrounding area

**YES**



# Container for dead pigs

**NO**





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# Loading Area

**YES**



35

# Loading Area

**NO**



# Biosecurity

**in practice is implemented through:**

## *Physical protection measures:*

- Enclosing, fencing, roofing, netting
- Cleaning, disinfection and control of insect and rodents

## *Management measures:*

- Procedures for entering and exiting the establishment for animals, products, vehicles and persons
- Procedures for using equipment
- Conditions for movement based on risk involved
- Conditions for introducing animals or products into the establishment
- Quarantine, isolation or separation of newly introduced or sick animals
- A system for safe disposal of dead animals and other animal by-products.

# Quarantine

- Animals physically isolated from the rest of the herd
- Animals frequently checked to early detect the presence of ASF (or other diseases)
- Animals vaccinated
- Animals introduced to the farm-specific biome (e.g. outbound animals put in contact)
- Passive surveillance, supplemented when necessary by lab testing

# Buying-in Policy

- Careful evaluation of the health status of the supplier(s)
- Low number of supplier(s)
- Transport management
- C&D loading/unloading area
- Quarantine



# Biosecurity in Backyards

*(minimum requirements)*

- No contact between the pig(s) of the holding and other susceptible animals (double fencing)
- **No swill feeding** / [Treatment (T°: 70°x 30m = negligible risk)]
- No contact to any part of feral pig (hunted or dead wild boar/meat/by-products)
- Unauthorized persons are not allowed to enter the pig holding (stable)
- The owner / person in charge of the pigs, should change clothes on entering the stable and leaving the stable having disinfection at the entrance of holding (stable)

# Biosecurity in Backyards

(addition *in ASF affected regions and at high risk*)

- No feeding of fresh cut roughage / grass
- Suspension of all outdoor-housing practices
- Mandatory reporting of every dead animal

## Do we understand biosecurity?



**It is not just following a checklist!**

**Tell me, I'll forget!**

**Show me, I may remember!**

**Involve me, I'll understand!**



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